

R E M A R K S

Claims 1 to 15 as set forth in Appendix II of this paper are currently pending in this case. Claims 4 to 6 have been amended, and Claims 11 to 15 have been added as indicated in the Listing of Claims set forth in Appendix I of this paper.

Accordingly, applicants have made a number of editorial changes in the wording of Claims 4 to 6. Additionally, Claim 4 has been adapted to the disclosure on page 17, indicated lines 24 to 26, of the application. New Claims 11 to 15 have been added to further bring out some of the subsidiary embodiments of applicants' invention which are disclosed on page 7, indicated lines 32 to 38, of the application¹⁾, on page 17, indicated lines 24 to 29, of the application²⁾, and on page 16, indicated lines 43 to 45, of the application³⁾. No new matter has been added.

The Examiner has rejected Claims 4 to 6 under 35 U.S.C. §112, ¶2, as being indefinite.

With regard to Claim 4 the Examiner points to the degree of cation exchange in the hydrophobicized phyllosilicate. Claim 4 as herewith presented no longer refers to the degree of cation exchange, so that the Examiner's reasons concerning Claim 4 no longer apply.

With regard to Claims 5 and 6 the Examiner points, on the one hand, to improper Markush language. Applicants' amendment corrects the Markush language and obviates the Examiner's respective criticism. On the other hand, the Examiner takes the position that the expression "derivative" renders the subject matter of Claims 5 and 6 indefinite. It is respectfully noted that applicants' claims not merely refer to an unspecified "derivative". Rather, the claims in question refer to "an ester-forming derivative of the [dicarboxylic] acid". The essential inquiry pertaining to the definiteness requirement of Section 112, ¶2, is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity, not in a vacuum, but in light of:

(A) The content of the particular application disclosure;

1) New Claims 14 and 15.

2) New Claims 11 and 12.

3) New Claim 13; in conjunction with page 17, indicated lines 24 to 29, of the application.

- (B) The teachings of the prior art; and
- (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.

Ester-forming derivatives of dicarboxylic acids are well known in the art pertaining to the preparation of polyesters as corroborated by the respective references in *Hyunkook et al.*⁴⁾ (of record), *Warzelhan et al.*⁵⁾ (of record) and *Bagrodia et al.*⁶⁾ (of record). The referenced sections of the prior art not only corroborate that ester-forming derivatives of dicarboxylic acids are well known to one possessing the ordinary level of skill in the art pertaining to the preparation of polyesters. By only mentioning exemplary representatives of such derivatives the referenced sections in the prior art also corroborate that a person of ordinary skill in the pertinent art is so well acquainted with such ester-forming derivatives that a detailed definition of such groups is generally deemed unnecessary⁷⁾. In light of the prior art it is therefore not apparent, nor has the Examiner given any reasons, why a person of ordinary skill in the art pertaining to polyesters would not comprehend the metes and bounds of the expression "an ester-forming derivative of the [dicarboxylic] acid". As explained in *Ex parte Wu*⁸⁾

In rejecting a claim under the second paragraph of 35 U.S.C. 112, it is incumbent on the examiner to establish that one of ordinary skill in the pertinent art, when reading the claims in light of the supporting specification, would not have been able to ascertain with reasonable degree of precision and particularity the particular area set out and circumscribed by the claims.

In light of the foregoing and the attached it is therefore respectfully requested that the rejection under Section 112, ¶2, be withdrawn. Favorable action is solicited.

It is also respectfully solicited that the Examiner withdraw the objections to Claims 5 and 6 in light of the editorial changes made

4) Note, in particular, page 7, indicated lines 15 to 17, of *WO 92/13019*.

5) Note, in particular, col. 2, indicated lines 52 to 60, of *US 6,018,004*.

6) Note, in particular, col. 4, indicated lines 60 to 63, of *US 6,395,386*.

7) An application need not teach, and preferably omits, what is well known in the art (*In re Buchner*, 929 F.2d 660, 18 USPQ2d 1331 (CAFC 1991); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 USPQ 81 (CAFC 1986), cert. denied, 480 U.S. 947 (1987); and *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481 (CAFC 1984)).

8) 10 USPQ2d 2031 at 2033 (BPAI 1989)

by applicants in those claims.

The Examiner has rejected Claims 1 to 4, 7, 8 and 10 under 35 U.S.C. §102(e) as being anticipated by the disclosure of *Topolkaraev et al.* (US 6,492,452).

The disclosure of *Topolkaraev et al.* relates to compositions comprising a "water-responsive" polymer and organically modified clay particles⁹⁾. According to the definition of *Topolkaraev et al.* the expression "water-responsive" means "water-soluble", "water-dispersible", "water-disintegratable" or "water-weakenable"¹⁰⁾. *Topolkaraev et al.* further provide that¹¹⁾

water-responsive polymers include polymers and copolymers of ethylene oxide and other polar polymers whose properties degrade when exposed to water and aqueous solutions.

The Examiner will note that *Topolkaraev et al.* distinguish between "water-responsive" properties of the polymer and a degradation of the polymer under the influence of microorganisms (ie. biodegradation) when the expression "environmentally degradable" is defined¹²⁾.

Topolkaraev et al. state that it is desirable that the water-responsive ethylene oxide (co)polymer is also "environmentally degradable, particularly biologically degradable"¹³⁾, and address the option to blend the water-responsive ethylene oxide (co)polymer with biologically degradable polymers¹⁴⁾. The organically modified clay particles are employed in the composition in an amount of from 1 to 70% by weight, desirably 5 to 60% by weight and even more desirably 10 to 50% by weight¹⁵⁾. Additionally, *Topolkaraev et al.* teach that¹⁶⁾

The addition of organically modified clay particle and/or organically modified layered silicate particles to water-soluble ethylene oxide polymers provides controlled degradability and enhances the mechanical and structural stability of the polymers in contact with aqueous liquids. Significantly and unexpectedly, the addition of organically modified clay or silicate particles im-

9) For example, col. 1, indicated lines 16 to 25, and col. 3, indicated lines 24 to 27, of US 6,492,452.

10) Note col. 6, indicated lines 12 to 15, in conjunction with col. 5, indicated line 61, to col. 6, indicated line 9, of US 6,492,452.

11) Note col. 3, indicated lines 27 to 31, of US 6,492,452.

12) Note col. 6, indicated lines 15 to 24, of US 6,492,452.

13) Note col. 3, indicated lines 33 to 35, of US 6,492,452.

14) Note col. 7, indicated lines 15 to 19, of US 6,492,452.

15) Note col. 10, indicated lines 51 to 61, of US 6,492,452.

16) Note col. 4, indicated lines 58 to 67, of US 6,492,452; emphasis added.

proves the melt processability of the ethylene oxide polymers,
...

Accordingly, the disclosure of *Topolkaraev et al.* cannot be taken to teach or suggest that an addition of modified clay or silicate particles to a polymer which differs from ethylene oxide polymers will provide the resulting composition with any particular properties .

Applicants' invention as defined in Claim 1 and further specified in Claims 2 to 15 relates to a biodegradable thermoplastic molding composition which comprises

- a) at least one *biodegradable thermoplastic copolyester*, and
- b) based on the total weight of the thermoplastic molding composition, from 0.01 to 15% by weight of at least one hydrophobicized phyllosilicate.

The disclosure of *Topolkaraev et al.* does not amount to an anticipating disclosure within the meaning of Section 102. Anticipation under Section 102 can be found only if a reference shows exactly what is claimed; where there are differences between the references disclosure and the claim, a rejection must be based on obviousness under Section 103¹⁷⁾. Also, the test for anticipation is one of identity, the identical invention must be shown in the prior art in as complete detail as is contained in the claim¹⁸⁾, and a generic description is not enough to find anticipation unless the claimed subject matter is specified with sufficient detail¹⁹⁾. On the one hand, *Topolkaraev et al.*'s mandatory water-responsive polymer is an ethylene oxide (co)polymer rather than a biodegradable thermoplastic copolyester. On the other hand, *Topolkaraev et al.* does not point to the addition of hydrophobicized phyllosilicates in an amount of from 0.01 to 15% by weight sufficient specificity²⁰⁾.

17) ie. Titanium Metals Corp. v. Banner, 778 F.2d 775, 227 USPQ 773 (CAFC 1985); In re Marshall 577 F.2d 301, 198 USPQ 344 (CCPA 1978); In re Kalm 378 F.2d 959, 154 USPQ 10 (CCPA 1967)

18) ie. Richardson v. Suzuki Motor Co., 868 F.2d 1226, 9 USPQ2d 1913 (CAFC 1989)

19) ie. In re Baird, 16 F.3d 380, 29 USPQ2d 1550 (CAFC 1994); see also Corning Glass Works v. Sumitomo Electric U.S.A., 868 F.2d 1251, 9 USPQ2d 1962 (CAFC 1989), which holds that a genus does not inherently disclose all species; and In re Jones, 958 F.3d 347, 21 USPQ2d 1614 (CAFC 1992), which holds that a genus does not render all species that happen to fall within the genus obvious.

20) If the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range it may be reasonable to conclude that the narrow range is not disclosed with "sufficient specificity" to constitute an anticipation of the claims' (Ex parte Lee, 31 USPQ2d 1105 (BPAI 1993) (expanded Board)).

Also, as already noted, the teaching of *Topolkaraev et al.* solely refers to an effect which arises when the modified clay or silicate particles are combined with the ethylene oxide (co)polymer. The teaching of *Topolkaraev et al.* does not suggest or imply that any particular effect will result when modified clay or silicate particles are combined with a polymer which differs from ethylene oxide polymers such as a biodegradable thermoplastic copolyester. Accordingly, nothing in the teaching of *Topolkaraev et al.* suggests or implies that the mechanical properties and performance characteristics, as well as the yield stress and processability, of biodegradable thermoplastic copolyesters can be improved without impairing other properties such as toughness and biodegradability by adding from 0.01 to 15% by weight of at least one hydrophobicized phyllosilicate²¹⁾.

In light of the foregoing it is respectfully requested that the rejection of Claims 1 to 4, 7, 8 and 10 under 35 U.S.C. §102(e) based on the disclosure of *Topolkaraev et al.* be withdrawn. Favorable action is solicited.

For essentially the same reasons, the teaching of *Topolkaraev et al.* cannot be considered to render applicants' invention prima facie obvious within the meaning of Section 103(a). It is well established that the inventive subject matter as a whole, which is referred to in the statute, is not limited to the combination of features which is particularly recited in the claims, but also encompasses the properties which are inherent in the particular combination of features set forth in the claims, as well as the problem which is solved²²⁾. As addressed in the foregoing, the teaching of *Topolkaraev et al.* does not suggest or imply that a combination of modified clay or silicate particles and a biodegradable thermoplastic copolyester provides for any particular effect. The teaching of *Topolkaraev et al.* therefore fails to render applicants' invention as a whole prima facie obvious. Favorable action is solicited.

The same applies, mutatis mutandis, to the Examiner's rejection of Claims 5 and 6 under 35 U.S.C. §103(a) as being unpatentable in

21) Note in this regard the data provided in applicants' Tables 1 and 2, pages 26 and 27, of the application.

22) ie. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); In re Wright, 848 F.2d 1216, 6 USPQ2d 1959 (Fed. Cir. 1988), overruled on other grounds in In re Dillon, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990) (en banc), cert. denied 500 U.S. 904 (1991)

light of the teaching of *Topolkaraev et al.* when taken in view of the disclosure of *Hyunkook et al.* (WO 92/13019²³) or in view of the disclosure of *Warzelhan et al.* (US 6,018,004²⁴).

The disclosure of *Hyunkook et al.* relates to biodegradable polyesters having improved mechanical properties and performance characteristics²⁵). In accordance with *Hyunkook et al.*'s teaching, the improvement is achieved by a chemical modification of the polyester, namely by incorporating about 0.1 to 2.5 mole % of a metal salt of 5-sulfoisophthalic acid²⁶). In accordance with the teaching of *Warzelhan et al.* the improved mechanical properties and performance characteristics are equally obtained through a chemical modification of the polyester, namely by incorporating into the polyester a compound D which has at least three groups which are capable of ester formation and, optionally, compounds containing sulfonate groups²⁷). Neither one of the secondary references suggests or implies that the desired improvements may be achieved by means other than a chemical modification of the polyester.

As pointed out in the foregoing, *Topolkaraev et al.* merely teach that the addition of modified clay or silicate particles has an effect on ethylene oxide polymers²⁸) and does not suggest or imply that any effect can be achieved when the ethylene oxide polymer is replaced by any other polymer in general or, more particularly, a biodegradable thermoplastic polyester. The secondary references do not provide information or even a suggestion which would be suitable to close this gap between the teaching of *Topolkaraev et al.* and applicants' invention as a whole.

The teaching of *Topolkaraev et al.* when taken in view of the disclosure of *Hyunkook et al.* or in view of the disclosure of *Warzelhan et al.* therefore fails to render applicants' invention prima fa-

23) An explanation of the referenced prior art is provided on page 1, indicated lines 36 to 41, of the application.

24) An explanation of the referenced prior art is provided on page 2, indicated lines 16 to 22, of the application. The Examiner will note that the German application referenced in that section of applicants' disclosure is identical to the priority document identified in [30] on the face of US 6,018,004.

25) For example Abstract of WO 92/13019.

26) For example page 4, indicated lines 13 to 20, of WO 92/13019.

27) For example col. 1, indicated lines 6 to 30, in conjunction with col. 2, indicated lines 30 to 33, of US 6,018,004.

28) Note ftn. (16) on page 4 of this paper and the corresponding section of *Topolkaraev et al.*'s disclosure.

cie obvious within the meaning of Section 103(a). Favorable reconsideration of the Examiner's position and withdrawal of the respective rejections is respectfully solicited.

The Examiner has further rejected Claim 9 under 35 U.S.C. §103(a) as being unpatentable in light of the teaching of *Topolkaraev et al.* when taken in view of the disclosure of *Bagrodia et al.* (US 6,395,386) which relates to a multilayer article having improved barrier properties and excellent clarity²⁹). The improved barrier properties of the article are achieved in accordance with *Bagrodia et al.*'s disclosure though an inner layer which comprises a carrier resin and at least 0.01% by weight of platelet particles³⁰), and the excellent clarity results from combining the inner layer with one or two outer layers³¹). *Bagrodia et al.* teach that essentially every polymer which is melt processible is suitable as the carrier resin³²) and polyesters are mentioned among the representative examples for melt processible polymers. *Bagrodia et al.* are, however, not concerned with the particular intricacies of biodegradable thermoplastic copolyesters or with means which are suitable to improve the mechanical properties and/or the performance characteristics of biodegradable thermoplastic copolyesters. As such, the teaching of *Bagrodia et al.* cannot be regarded as analogous art. Two criteria have evolved for determining whether prior art is analogous³³):

- (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and
- (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.

The teaching of *Bagrodia et al.* clearly cannot be regarded belonging to the field of applicants' endeavor, ie. the art which deals with the intricacies of biodegradable thermoplastic copolyesters. The teaching of *Bagrodia et al.*, therefore, does not fall within the first group of analogous prior art. Further, the disclosure of *Bagrodia et al.* cannot reasonably be regarded as being pertinent to the problems involved in improving the mechanical properties and/or the

29) For example Abstract of US 6,395,386.

30) Note col. 3, indicated line 60, to col. 4, indicated line 6, of US 6,395,386.

31) Note col. 4, indicated lines 7 to 18, of US 6,395,386.

32) Note col. 4, indicated line 35 et seq., of US 6,395,386.

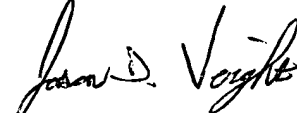
33) ie. *In re Clay*, 966 F.2d 656, 23 USPQ2d 1058 (CAFC 1992)

performance characteristics of biodegradable thermoplastic copolyesters, and the second prong is equally not met. Accordingly, the teaching of *Bagrodia et al.* cannot be considered to constitute analogous art which is applicable in the determination whether the subject matter of applicants' claims was *prima facie* obvious³⁴). It is therefore respectfully requested that the rejection of Claim 9 under 35 U.S.C. §103(a) based on the disclosure of *Topolkaraev et al.* when taken in view of the teaching of *Bagrodia et al.* be withdrawn. Favorable action is solicited.

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Respectfully submitted,

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Encl.: THE LISTING OF CLAIMS (Appendix I)
THE AMENDED CLAIMS (Appendix II)

HBK/BAS

34) Note *Jurgens v. McKasy*, 927 F.2d 1552, 18 USPQ2d 1031 (CAFC 1991), cert. denied, 502 U.S. 902 (1991) which holds that a cited reference which is not analogous art has no bearing on the obviousness of the claim.